



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/733,421   | 12/10/2003  | Yasuo Suda           | 1232-5230           | 2117             |
| 27123  | 7590        | 03/08/2007           | EXAMINER            |                  |
| MORGAN & FINNEGAN, L.L.P.<br>3 WORLD FINANCIAL CENTER<br>NEW YORK, NY 10281-2101 |             |                      | KHAN, USMAN A       |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2622                |                  |
| SHORTENED STATUTORY PERIOD OF RESPONSE   | MAIL DATE   | DELIVERY MODE        |                     |                  |
| 3 MONTHS   | 03/08/2007  | PAPER                |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 10/733,421             | SUDA, YASUO         |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | Usman Khan             | 2622                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 12/10/2003.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1 and 3-5 is/are rejected.
- 7) Claim(s) 2 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 10 December 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on 11/23/2004 and 02/07/2005 have been considered by the examiner. The submission is in compliance with the provisions of 37 CFR 1.97.

***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: An image sensing apparatus comprising focusing using output from a movable optical element array.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Stauffer (US patent No. 4,410,804).

Regarding **claim 1**, Stauffer teaches an image sensing apparatus comprising: an image sensing device having a plurality of pixels (figure 1, item 19; and column 2 lines 4 et seq. detector array 19 having a plurality of detector pairs e.g. 20 and 21); an optical element array having a plurality of optical elements made to correspond one by one to each set of a plurality number of pixels of a plurality of pixels of said image sensing device (figure 1, items 15 and 19; and column 2 lines 4 et seq. lenslet array 15 in which each lenslet corresponds to a detector array 19 having a plurality of detector pairs e.g. 20 and 21); and a focusing device which generates, for each of the plurality of optical elements, one pair of focus detection signals in the pixels from light passing through the optical element, and performs focusing operation on the basis of focus detection signals generated in pairs for each of the optical elements (column 1 lines 55 et seq. and figure 1 item 26; column 2 lines 25 et seq. the range of the object is calculated for focusing purposes).

Regarding **claim 5**, as mentioned above in the discussion of claim 1, Stauffer teaches all of the limitations of the parent claim. Additionally, Stauffer teaches that the focusing operation is performed by using signals generated by concatenating the focus detection signals obtained from a plurality of pixels, of the plurality of pixels of said image sensing device, which are arranged discretely (figure 1, items 15 and 19; and

column 2 lines 4 et seq. lenslet array 15 in which each lenslet corresponds to a detector array 19 having a plurality of detector pairs e.g. 20 and 21).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stauffer (US patent No. 4,410,804) in further view of Chen (US patent No. 5,257,133).

Regarding **claim 3**, as mentioned above in the discussion of claim 1, Stauffer teaches all of the limitations of the parent claim. However, Stauffer fails to teach that the optical element comprises a re-imaging optical system. Chen, on the other hand discloses that the optical element comprises a re-imaging optical system.

More specifically, Chen discloses that it is well known in the art to use an optical element comprises a re-imaging optical system (column 2 lines 60 et seq. and column 1 lines 27 et seq.). Also, Chen uses a re-imaging optical system in his invention.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Chen with the teachings of Stauffer because in column 1 lines 27 et seq. Chen teaches that it is well known in the art to use a re-imaging optical system as a means for better off-axis radiation rejection,

100 percent cold shielding with the cold stop next to the detector module, and an accessible entrance pupil. Also, in column 2 lines 16 – 31 Chen teaches in his invention the diffractive optical element eliminates a number of individual optical elements which would otherwise be required to correct aberrations, thereby reducing the total number of optical elements in the system. This results in better image quality, better throughput, and a lighter less bulky re-imaging optical system.

Claims 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stauffer (US patent No. 4,410,804) In further view of Wood et al. (US patent No. 5,675,149).

Regarding **claim 4**, as mentioned above in the discussion of claim 1, Stauffer (US patent No. 4,410,804) teaches all of the limitations of the parent claim.

However, Stauffer (US patent No. 4,410,804) fails to teach that a switching device which switches between a first state in which light is received by said image sensing device without through said optical element array and a second state in which light is received by said image sensing device through said optical element array. Wood et al., on the other hand discloses a switching device which switches between a first state in which light is received by said image sensing device without through said optical element array and a second state in which light is received by said image sensing device through said optical element array.

More specifically, Wood et al. discloses a switching device which switches between a first state in which light is received by said image sensing device without

through said optical element array and a second state in which light is received by said image sensing device through said optical element array (Column 6, lines 10 – 15; slider 46 and array 10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Wood et al. with the teachings of Stauffer (US patent No. 4,410,804) because in column 1 liens 7 – 13 Wood et al. teaches that the invention produces a extremely low-cost camera usable for still-frame infrared photography.

#### ***Allowable Subject Matter***

**Claim 2** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter for **claim 2**: Image signals are generated in the pixels from light passing through gaps between the plurality of optical elements of said optical element array is not discussed or suggested in any of the prior art that was searched.

#### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2622

Wachi (US patent No. 5,379,282) teaches output from an optical element used for focusing.

Zambelli et al. (US patent No. 4,542,983) teaches a lens array movable from an optical axis for zooming procedure.

Fortin (US patent No. 4,653,911) teaches a lens array movable about an optical axis for zooming procedure.

Sussman et al. (US patent No. 5,686,960) teaches a lens array movable from an optical axis.

Mates (US patent No. 6,987,258) teaches output from an optical element used for focusing using plurality of pixels.

Clarke (US patent No. 6,057,538) teaches output from an optical element used for plurality of pixels.

Nagasaki et al. (US patent No. 5,083,150) teaches output from an optical element used for focusing.

TANIGUCHI et al. (US PgPub 2002/0113866) teaches optical element array associated with a plurality of pixels.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Usman Khan whose telephone number is (571) 270-1131. The examiner can normally be reached on Mon-Thru 6:45-4:15; Fri 6:45-3:15 or Alt. Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Usman Khan  
03/02/07  
Patent Examiner  
Art Unit 2622



DAVID OMETZ  
SUPERVISORY PATENT EXAMINER